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3D Food Printing; Food Processing Engineering; Food Rheology and Printability; Plant-based Proteins; Computational Modelling

Our research focuses on advancing extrusion-based 3D food printing by optimizing machine design, sensors integration and process optimisation to achieve stable printability and controlled food texturization. Our work integrated computational fluid dynamics modelling with experimental validation to predict the flow behaviour of high-viscosity food materials and guide the design and optimization of extrusion mechanisms, print heads and operating parameters. Ultimately, the research aims to support personalized and sustainable food production through advanced food manufacturing technologies.

Potential Areas for Collaboration

- Food Science and Rheology: Development and characterization of printable food ink formulations, including plant-based proteins and hydrocolloids with suitable rheological properties for stable extrusion and processing
 - Smart Food Manufacturing: Integration of computational simulation, food processing design and real-time sensing/monitoring to ensure the food product quality and enable personalized food production
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